Sidebands

The Newsletter of the EAST GREENBUSH AMATEUR RADIO ASSOCIATION

www.egara.club

June 2020

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A Different Field Day for 2020

EGARA will once again participate in Field Day this year, but not in the usual manner because of the coronavirus pandemic.

Instead of the regular central station setup at the East Greenbush Masonic Temple, the club will take advantage of a change in the ARRL's Field Day rules which will allow members to operate their home stations to make contacts and score FD points under the "Class D" category. The temporary rule changes will allow them to earn points by contacting other "Class D" stations. Under normal FD rules, "D" to "D" station contacts would not count. Members may also work as "Class E" stations if they only use emergency power. Class identification with either be 1D or 1E when exchanging information with other stations.

Under the temporary rules, members will use their own call signs to make contacts and will be credited with their individual point totals. However, their points will also be accumulated under the club name and posted in the rankings.

The list of FD temporary rule changes for this year are listed on page 3. The full FD rules can be downloaded as a PDF file from the ARRL website at: http://www.arrl.org/files/file/Field-Day/2020/1_61-2020%20Rules.pdf. **It should be noted this PDF file did not include the temporary rule waiver for Class D stations as of the time this newsletter was published**. However, the rest of the rules remain the same.

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"I'm happy the ARRL agreed to the temporary rule change to allow Class D home stations to contact each other for points," said Field Day Chairman, and EGARA Vice President Nick Field, KD2JCR. "Like most everything else, we need to adapt to these unusual times to make things work as best we can. I think this year's Field Day will be a much bigger success with these modest changes."

While complete details for the club's FD participation are still being finalized, members will be asked to sign up for a two-hour slot(s) and indicate what band(s) they plan to work. However, members will be able to work as many slots and bands that they want. In addition, multiple members can work the same band at the same time this year. Plus this year, the EGARA member with the most points will win a Wouxon DMR HT radio!

Operating bands eligible for earning contact points are 160, 80, 40, 20, 15 and 10 Meter HF bands, as well as all bands 50 MHz and above.

The current plan is to provide each member with a link to download the FD logging software that will be used. Members will submit their individual scores by email so they can be combined and sent to ARRL for credit. Complete details will be emailed in advance of Field Day weekend.

Next Membership Meeting - June 10, 2020 via Zoom

Hamfest 2020 Still Scheduled, But Decision Time Approaching

EGARA's 19th annual Hamfest is still on the calendar for Saturday, August 29th, but there is still uncertainty as to whether it will be possible to hold the event this year given continued concerns about the current pandemic. Club officers expect to make a final decision no later than mid to late July based on the best information available at that time.

Unfortunately, concerns about CoVid-19 have forced the cancellation of public events throughout the nation, including most Hamfests.

"The health and safety of our members and our Hamfest guests is our number one priority," said EGARA President Bryan Jackson, W2RBJ. "We've been fortunate to line-up an extensive array of sponsors and prizes, but we may have to wait until next year to hold our event if it's deemed too risky to people's health and wellbeing. Of course, we will honor our commitments to our sponsors and continue to promote their participation and products."

Presently, EGARA has approximately $3,000 worth of prizes available for its Hamfest.

2020 Hamfest Sponsors

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ARRL The national association for AMATEUR RADIO

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Temporary ARRL Field Day 2020 Rule Changes

With Field Day coming right up on June 27 – 28, the ARRL Programs and Services Committee (PSC) has adopted two temporary rule waivers for the event:

1) For Field Day 2020 only, Class D stations (Home Stations) may work all other Field Day stations, including other Class D stations, for points.

Field Day rule 4.6 defines Class D stations as "Home stations," including stations operating from permanent or licensed station locations using commercial power. Class D stations ordinarily may only count contacts made with Class A, B, C, E, and F Field Day stations, **but the temporary rule waiver for 2020 allows Class D stations to count contacts with other Class D stations for QSO credit.**

2) In addition, for 2020 only, an aggregate club score will be published, which will be the sum of all individual entries indicating a specific club (similar to the aggregate score totals used in ARRL affiliated club competitions).

Ordinarily, club names are only published in the results for Class A and Class F entries, but the temporary rule waiver for 2020 allows participants from any Class to optionally include a single club name with their submitted results following Field Day.

For example, if Podunk Hollow Radio Club members Becky, W1BXY, and Hiram, W1AW, both participate in 2020 Field Day — Hiram from his Class D home station, and Becky from her Class C mobile station — both can include the radio club's name when reporting their individual results. The published results listing will include individual scores for Hiram and Becky, plus a combined score for all entries identified as Podunk Hollow Radio Club.

The temporary rule waivers were adopted by the PSC on May 27, 2020.

ARRL Field Day is one of the biggest events on the amateur radio calendar, with over 36,000 participants in 2019, including entries from 3,113 radio clubs and emergency operations centers. In most years, Field Day is also the largest annual demonstration of ham radio, because many radio clubs organize their participation in public places such as parks and schools.

Due to the COVID-19 pandemic, many radio clubs have made decisions to cancel their group participation in ARRL Field Day this year due to public health recommendations and/or requirements, or to significantly modify their participation for safe social distancing practices. The temporary rule waivers allow greater flexibility in recognizing the value of individual and club participation regardless of entry class.

ARRL is contacting logging program developers about the temporary rule waivers so developers can release updated versions of their software prior to Field Day weekend. Participants are reminded that the preferred method of submitting entries after Field Day is via the web applet. The ARRL Field Day rules include instructions for submitting entries after the event. Entries must be submitted or postmarked by Tuesday, July 28, 2020.

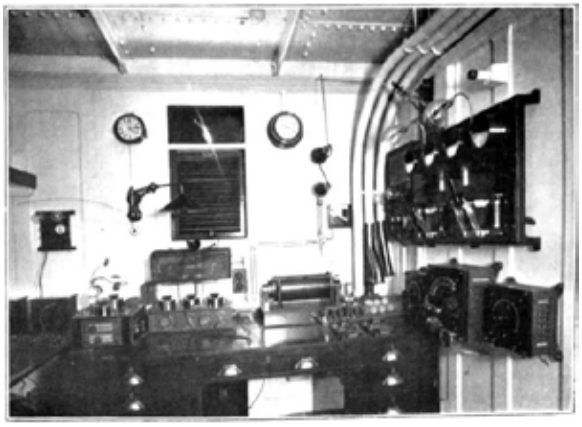
Judge OKs Salvage of Titanic's Telegraph Set

U.S. District Judge Rebecca Beach Smith has ruled that salvage firm RMS Titanic, Inc. (RMST) will be allowed to recover a Marconi telegraph machine from the wreck of the Titanic. The decision alters a 2000 ruling that prohibited cutting into or detaching any part of the ship.

The Marconi telegraph is historically significant because chief telegraphist Jack Phillips used the equipment to send the Titanic's final distress calls. These frantic messages reached the RMS Carpathia, which was able to save around 700 of the ship's 2,208 passengers and crew during the April 1912 disaster.

The Titanic's hull, discovered south of Newfoundland in 1985, is split into two parts. Surrounded by a debris field, the wreck is located about two-and-a-half miles underwater.

"The Marconi device has significant historical, educational, scientific and cultural value as the device used to make distress calls while the Titanic was sinking," wrote Smith, a maritime jurist based in Norfolk, Virginia. Smith's ruling allows RMST to "minimally to cut into the wreck" to access the telegraph room.



This is the only know photo of the Titanic's radio room. Efforts will be made to save it from the sea.

Numerous organizations—including the National Oceanic and Atmospheric Administration (NOAA)—are strongly opposed to the salvage plan. NOAA argues that RMST's planned expedition violates an agreement made between the United States and the United Kingdom earlier this year. Because the Titanic's intended path would have brought it from England to New York City, the two countries share management of the ship's remains. The treaty expands on Unesco regulations that ban commercial exploitation of the wreck and call for its preservation.

In her ruling, Smith acknowledged NOAA's arguments regarding the international agreement but noted that the agency was not a formal party in the case. The judge further stated that the only matter before the court was the no-cut order made in 2000.

"We need to honor the ship and the passengers that sailed on her," David Gallo, an oceanographer and consultant for RMST, told the New York Times, adding that the company wants to avoid damaging the ship's remains. "We may get out there and decide not to do it because it's impossible to do it without destroying the ship. We have plans to do it surgically with minimum damage."

The firm plans to use a remote-operated vehicle to enter the wreck through an open skylight above the telegraph room. If this strategy fails, the vehicle will cut an entrance in the hull. Then, an operator will direct the vehicle's robotic arms to disconnect the telegraph parts from the ship. The court filing notes that the mission's primary targets—a motor-generator set and discharger and a set of wall-mounted switchboards and regulators—"present serious challenges to recovery," so three smaller, more lightweight artifacts are being treated as "secondary targets," according to National Geographic.

Photographs and video taken in 2019 show damage to the wreck that RMST claims threatens the preservation of the Marconi telegraph. Still, RMST's mission will likely face further legal issues according to retired NOAA attorney and senior fellow at the Ocean Foundation Ole Varmer.

On the Beam
News & Notes

Global COVID-19 Radio Event Set for June 6 - 7

Stations bearing call signs that promote the "stay-at-home" message and the value of social distancing and isolation have sprung up during the COVID-19 pandemic, with some 150,000 messages of support shared around the world. An on-air gathering over the June 6 - 7 weekend will offer a further opportunity for stay-at-home stations and radio amateurs to share greetings in a contest-like framework, looking toward the day that restrictions will ease.

The founder of the STAYHOME radio campaign is Finland's Foreign Minister Pekka Haavisto, and the worldwide activity has the endorsement of International Amateur Radio Union (IARU) President Tim Ellam, VE6SH/G4HUA, and the United Nations Amateur Radio Club.

"Amateur radio operators across the world are experiencing something we have never seen before, with the current COVID-19 pandemic," Ellam said. "In times like this, on-the-air activities can benefit our communities and ourselves. Ellam expressed thanks to the national regulators in more than three dozen countries that made special stay-at-home-suffix call signs available for amateur use. UN Amateur Radio Club President James Sarte, K2QI, has said that 4U1UN will be on the air to support of the global STAY HOME movement, as will sister stations 4U1GSC (operated as 4U9STAYHOME) and 4U1A (operated as 4U2STAYHOME).

Special event station W2I/STAYHOME, helmed by Ria Jairam, N2RJ, and Peter Dougherty, W2IRT, will also be on the air, operating CW, SSB, and FT8 simultaneously. Jairam is ARRL Hudson Division Director.

The STAYHOME event gets under way at 1000 UTC on Saturday, June 6, concluding 24 hours later. Bands will include 80, 40, 20, 15, and 10 meters, with CW, SSB, and digital (FT4/FT8 only). Exchange is a signal report and operator age, except for FT4/FT8 reports. Awards and certificates in the various operating categories will be available.

Email for more information at: ***py2zea@gmail.com***

A New Record Claimed on 2 Meters

The claimed transatlantic record on 2 meters has been extended to nearly 4,760 kilometers (2,951 miles).

"The incredible tropo conditions between Cape Verde Islands and the Caribbean continue to amaze with transatlantic contacts on 144 MHz and 432 MHz being made," John Desmond, EI7GL, said in a blog post.

The April 8 FT8 contact was between D4VHF in the Cape Verde Islands and PJ2BR on Curacao. The distance covered was some 300 kilometers greater than the previous transatlantic record, set last summer by D41CV and NP4BM.

The new 2-meter transatlantic record distance is about 10 kilometers short of the IARU Region 1 tropospheric propagation record on that band, Desmond said. On April 7, an operator at D4VHF and Burt Demarcq, FG8OJ, on Guadeloupe completed the first direct transatlantic contact on 70 centimeters, spanning 3,867 kilometers (2,398 miles) using FT8.

The yellow line shows the distance covered by the new record transmission on 2 meters -- 2,951 Miles!

EGARA May Meeting Minutes

- The May meeting of the EGARA was called to order at 7:22 PM by President Bryan Jackson, W2RBJ. A total of 24 members checked in via Zoom, and the meeting logistics were coordinated by Treasurer Don Mayotte, KC2CDX and Bryan Jackson, through John Fritze.

- The annual hamfest is currently rescheduled for August 29, but it is very doubtful that we will hold the event this year. The drop dead date for the event is July 15.

- Treasurer's report: Some dues have been received via Paypal. No monthly expenses were incurred. Minutes of the April meeting are in the latest SIDEBANDS.

- The lawn tractor was repaired and serviced and delivered back to the Masonic Lodge.

- Field day: there was a lengthy discussion on how to operate our field day station – either from members QTHs, portable at Thatcher Park, or at the Masonic Temple. Pros and cons of the various options were discussed – final details are currently being worked out and members will be informed by email.

- Wouxon, one of several hamfest sponsors, has asked EGARA to evaluate some of its products. Testing is underway, along with an update of their instruction manual.

- Members who wish to receive text notifications will need to supply contact information to Bryan Jackson.

- A VE session may be held in July. Details will be discussed with Masonic Temple officers. Also, other options are being explored. Fred Carrol has information on alternative approaches. We may need to limit the number of test candidates in order to preserve social distancing. We may conduct a cleanup after the test.

- Items for the Buy/Sell/Trade section of the club newsletter SIDEBANDS are being sought. Some items appearing in the next issue will include an IFR service monitor, a military wattmeter, and other equipment.

- The installation of the 220 repeater is still in limbo. Bryan Jackson will be in contact with site personnel in the Helderbergs.

- During July and August, is it anticipated that virtual meetings will be held via Internet.

- Meeting adjourned at 8:13 PM.

--de Steve VanSickle WB2HPR / Secretar

Score the Most Field Day Points and Score a Wouxun DMR HT Radio!

This year we're adding some excitement to Field Day!

The EGARA club member who scores the most points will win a brand new KG-UVN1 DMR portable radio and accessories valued at over $150!

Whether you're looking to run DMR or analog, the KG-UVN1 has you covered. It's feature-packed with all the benefits of a high-end Digital Mobile Radio that also keeps your analog connections -- all in one portable handheld transceiver!

The Wouxun KG-UVN1 works with other makes and models of DMR supported radios with both Tier I & II compatibility -- plus compatibility with existing analog systems on the supported UHF and VHF Amateur Radio bands.

Add to that 3072 channels, 250 zones, and a whopping 160,000 contacts -- and the full radioid.net contact database is preloaded! The KG-UVN1 has CTCSS/DCS, digital encryption, channel scan, group scan and text messaging. It also features VOX, a full DTMF keypad, programmable multi-function side keys, and much, much more.

The KG-UVN1 offers high-end functionality throughout, including independent programming in VFO and channel modes, Private Call, Group Call, All Call, ARTS function, tail elimination, menu encryption, menu hide, and stun/kill/activate options. It has solid, rugged construction that puts it in the same league as commercial class radios for rugged durability.

So fire up your rig and go for gold this Field Day by winning a brand new Wouxun KG-UV1 Radio!

Lee De Forest, Pioneer Broadcaster

By John Schneider

Nov. 2, 1920, traditionally is recognized as the start of radio broadcasting in the United States. It's the date that station KDKA broadcast the Harding-Cox election returns from a primitive transmitter atop a Westinghouse factory building in Pittsburgh. But in reality, broadcasting had been taking place on an experimental, irregular basis for more than ten years prior.

Notable early experimenters included Reginald Fessenden in Massachusetts, Charles Herrold in California, Vincent Kraft in Seattle and Frank Conrad in Pittsburgh. And perhaps the most prominent of these early experimenters was Lee de Forest (1873-1961), the radio scientist noted for his invention of the triode vacuum tube.

De Forest had envisioned the concept of broadcasting news and music to an unseen audience as early as 1907, while experimenting with the transmission of voice using primitive arc transmitters.

"I had in mind its great usefulness as a means for broadcasting news and music entirely in addition to the use of the wireless telephone as a means of two-way communication by voice," he wrote later. "From the beginning, (as) a great lover of opera and fine music, I was intent on developing the means and methods for broadcast distribution of these elements of culture to widely scattered audiences."

De Forest conducted a number of demonstrations of voice transmission between 1906 and 1910, principally for the U.S. Navy, in which he broadcast phonograph music as well as the live voices of opera singers. In 1910, he broadcast a live performance from the stage of the Metropolitan Opera, although the sound quality was poor and almost no one heard the broadcast.

Lee de Forest transmits into an early arc transmitter, about 1910. Two telephone microphones are joined in parallel to create a double button carbon mic. The arc chamber is attached to the right side of the transmitter cabinet. To the right is an Audion receiver.

In 1914, Lee de Forest sold his "Audion" vacuum tube patents to AT&T, but he wisely retained the rights to use tubes for distribution of news and music, and to manufacture devices capable of receiving these broadcasts. AT&T foresaw no commercial value in broadcasting, and so readily conceded to this clause in the contract.

Then de Forest established a laboratory at 1391 Sedgewick Avenue in the Highbridge neighborhood of the Bronx, where he developed a high-power vacuum tube capable of radio transmitting, which he called the Oscillon.

In 1915, de Forest received an experimental station license with the call sign 2XG and began experimental transmissions of concerts and news bulletins on a wavelength of 800 meters (375 kHz). It was the first radio station to use vacuum tubes instead of obsolete arc or spark technologies.

In October of 1916, he made a cross-promotion agreement with the Columbia Gramaphone Company, and 2XG began broadcasting the latest Columbia recordings three nights a week.

Carl Dreher, a young amateur operator, later recalled being a regular 2XG listener: "The quality was quite good, and I used to listen to the station for hours at a time."

On Nov. 7, 1916, de Forest broadcast the returns of the Woodrow Wilson-Charles Evans Hughes presidential election, four years before KDKA. De Forest later wrote: "The New York American ran a wire line into our office so as to have the up-to-the-minute reports. I myself served as one of the announcers. At 11 o'clock that night we signed off, after assuring our invisible audience that Hughes had been elected president." The next morning, he was horrified to find out that late results from California had in fact reelected Woodrow Wilson for a second term. It was estimated that 7,000 people heard de Forest's broadcast that night, including listeners as far away as North Carolina.

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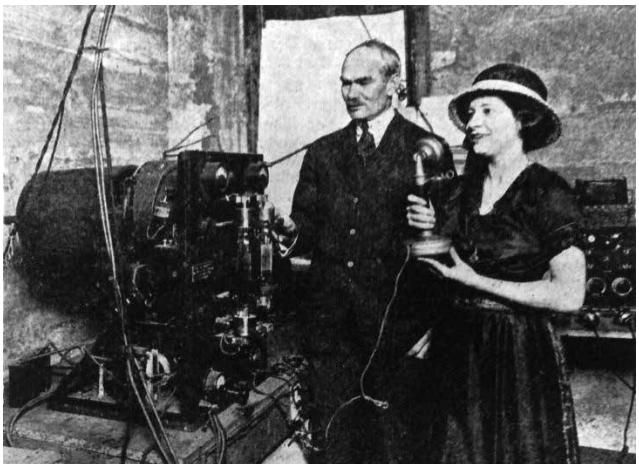
RADIO SILENCE



Vaughn De Leath, the "Original Radio Girl," first broadcast over de Forest's station 2XG in 1920.

After the United States entered the World War, all private radio stations were ordered off the air on April 17, 1917. The operators were instructed to take down their antennas and disassemble their transmitters. The general public was even prohibited from operating a radio receiver. As a result, all other early broadcast experimentation was halted. Lee de Forest's 2XG was shut down, along with the stations operated by Frank Conrad in Pittsburgh and Charles Herrold in California.

The receiver ban was not lifted until April 15, 1919, while the restriction against transmitting ended on September 26. De Forest immediately reopened his 2XG Highbridge station, and on Nov. 8 he broadcast the play-by-play results of a Wesleyan-New York University football game. Popular New York vocalist Vaughn De Leath also made the first of a series of live broadcasts, earning her the title of "The Original Radio Girl."

Early in 1920, de Forest moved the 2XG transmitter to the top of the World Tower Building in Manhattan, giving him improved coverage and easy access to performers in the city's theater district. But Radio Inspector Arthur Batcheller ordered 2XG to cease operations because he had not requested prior government approval for the move. "There is no room in the ether for entertainment," Batcheller declared.

Undaunted, de Forest packed up his equipment and took it to San Francisco, where he opened 6XC in the California Theatre, the city's most opulent motion picture house. His 1,000 watt transmitter broadcast on 1260 meters (238 kHz) into an antenna suspended between the theatre building and an adjoining bank building. On Jan. 28, 1920, he wrote: "California Theater radiophone is in pretty good shape. Antenna on Humboldt Tower is not ideal, but the music has been heard 1,200 miles out to sea."

By April of 1920, six months before KDKA, 6XC was airing daily broadcasts of Herman Heller's 50-piece orchestra live from the stage of the theatre.

A microphone attached to a large Magnavox horn was hung 40 feet above the stage to pick up the music. Live singers also performed into individual microphones, and harp and piano soloists were broadcast. To allow the transmission of phonograph records, a steel needle was connected directly to the diaphragm of a microphone mounted on the tone arm. Demonstration receivers were set up in clubs, hospitals and hotels around the area to introduce the public to the potential of radio broadcasting.

In September, ARRL President Hiram Percy Maxim addressed the 6XC audience, predicting that radio broadcasting would one day serve audiences in the millions.

OTHER INTERESTS

Late in 1921, Lee de Forest closed 6XC at the California Theater. It was relicensed as KZY by the Atlantic-Pacific Company, and installed in the Rock Ridge neighborhood of Oakland. Seen here is the de Forest 1 kW transmitter, left, and an Interpanel receiver at right.

But de Forest was beginning to lose interest in radio. His professional interests were being directed towards the development of his "Phonofilm" sound-on-film technology, and his radio work was delegated to others in the company.

And so in late 1921, after originating more than 1,500 separate broadcasts from the California Theatre, 6XC was shut down and the equipment was transferred to the Atlantic-Pacific Radio Corporation, the de Forest Radio Telephone and Telegraph Company's Western representative. A new station was installed in the company president's home in the Rock Ridge area of Oakland, and KZY, "The Rock Ridge Station," soon debuted.

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The History of Ham Radio: QSS Tests

Chris Codella, W2PA, author, John Pelham, W1JA, editor, Phil Johnson, W2SQ, editor

(Editor's note: By special arrangement with the authors, Sidebands is pleased to present this multi-part series on the history of ham radio. Subsequent chapters will be published in future monthly editions of the newsletter)

Never having observed the effects of a complete solar cycle on signals before, or at least not having paid attention to them, hams continued to be impressed, intrigued, and puzzled by the changing on-air conditions as the minimum approached, still two years away as the new decade began. At least one thing was clear: Radio waves didn't simply move from point to point along a straight line and decrease in strength with distance. Something else was happening too, but what?

In July 1920, QST noted that the usual summer radio season—meaning markedly worsening conditions—had entirely failed to appear. One reason had to do with an increased activity level and better equipment, but there was also an unusual lack of static on many nights. Equally strange was an increase in signal strength for some stations that had been heard only weakly the previous winter using the same equipment.

1TS observed that different segments of broad signals would fade differently. By constantly shifting his tune, he was able to continue copying a signal that was affected by fading. 8NZ thought he noticed that sharply tuned stations faded less than broad ones and attributed this to characteristics of the transmitter rather than propagation conditions. The editor concluded that both effects were due to shifting energy from one frequency to another, also blaming the transmitter. Yet he noted that NSF, with an "extremely sharp" signal, was not free from fading either. It was all quite confusing.

A.L. Groves of Brooke, Virginia observed that hams located in the same town using similar receivers, operator ability, and antenna direction, would hear entirely different groups of stations coming in loudly. One amateur might hear stations 500 miles away the strongest, another more like 100 to 150 miles, and for still another, the locals were strongest – and it seemed to depend on the height of the receiving antenna. He was on the right track, but did not yet understand that the groupings of received signals likely corresponded to different radiation angles.

Groves performed an experiment. With his antenna at 65 feet above ground he heard the Midwest best, including Chicago, Indiana and Ohio, but could hardly hear Washington, Baltimore, and Norfolk at all. Lowering his antenna to 30 feet, he could barely hear any 8th- and 9th-district stations but could now hear Baltimore stations "by the dozens." He speculated that signal strength might be a function of the height of both receiving and transmitting stations' antennas. The one exception was 8ER in St. Mary's, Ohio, whom he could not seem to hear very well on any combination (which seems odd, given the fact that Mrs. Candler's signal was one of the most prominent and easily copyable ones on the air).

He finally offered this insight, viewing QSS as an enhancement—albeit an unusable, unreliable one—rather than fading:

"One cause of so much so-called freakishness is the fact that the amateur as a rule tries to work far in excess of the normal range of his set and calls it freakishness when he can't get through one night or one hour as well as he can the next, when in reality it was only freakishness that allowed him to get through at all."

In relay work, therefore, Groves asserted that the emphasis should not be on maximum distance but on establishing reliable links. Warner then wrote of an antenna scheme suggested in another letter from Groves, where horizontal wires at different heights were used, and mentioned a theory that "variation in conductivity of the atmosphere… 'converts' the radio waves to a higher or lower altitude." They were getting close, but still did not quite appreciate things like radiation angle and sky waves.

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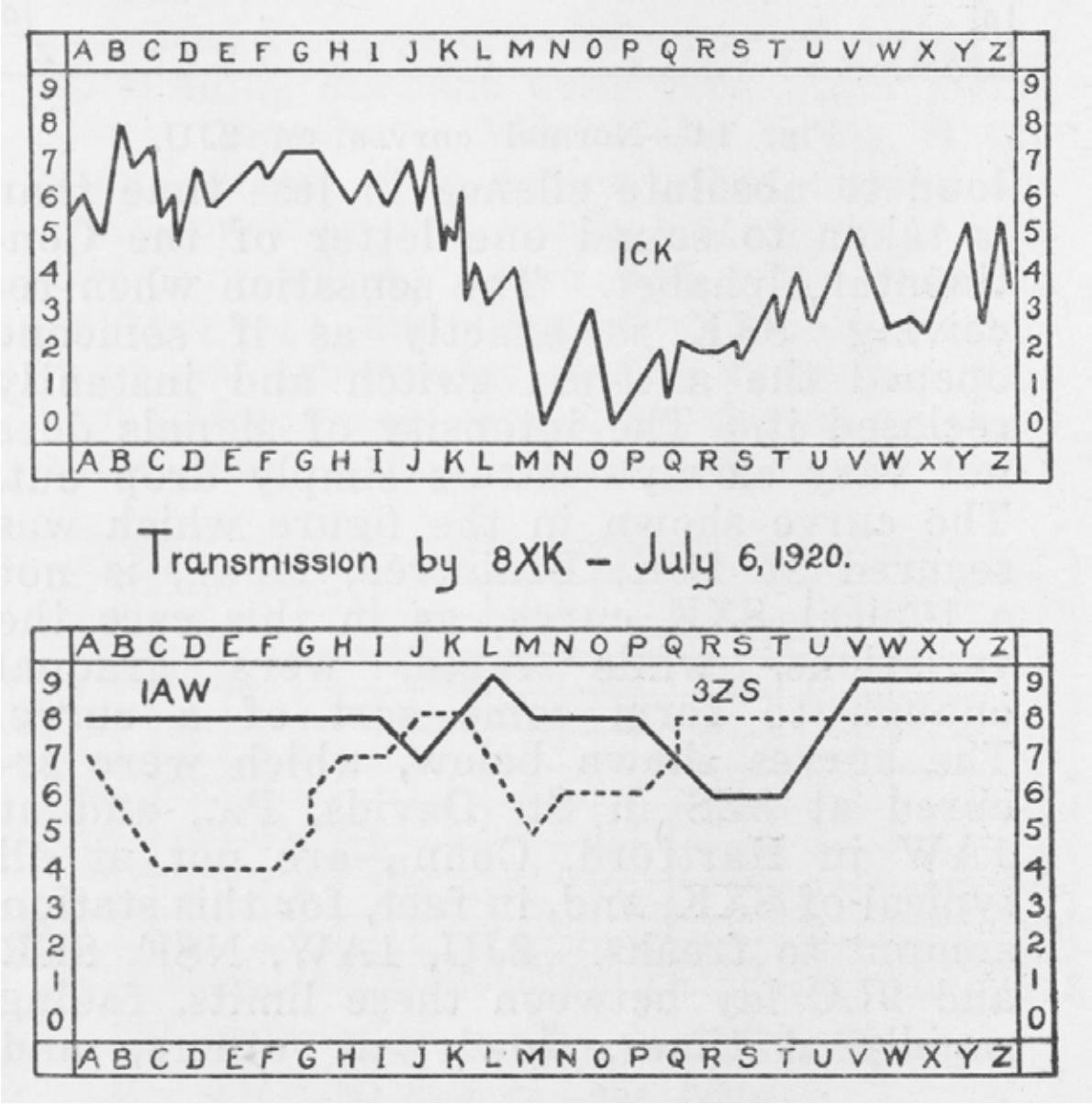
Instead of going on indefinitely as was originally thought, the QSS tests would conclude on August 31 so that analysis could proceed and perhaps improve the experimental methods. The basic procedure remained unchanged. Transmitting stations repeatedly sent a complete alphabet, and receiving stations recorded the strength for each letter on a scale from 0 to 9. But intelligently choosing which stations to monitor and when was just becoming clear. By late summer, the test organizers were already recommending new monitoring procedures based on what had been learned thus far, in an effort to make the reports more meaningful. For example, more could be learned by repeatedly monitoring the same transmitting station at the same time each night than by switching around to listen to different ones.



Example recorded curves for 8XK as received at 1CK, 1AW, and 3ZS

The Bureau tests would be tabulated and reported by the ARRL. Already the results seemed to support an increasingly popular scientific theory that reflection or refraction of waves was the cause of fading. The evidence for this was "progressive fading"—that which varied successively along a line outward from the transmitter—which could only be explained by a reflection mechanism occurring high in the atmosphere.

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History of Ham Radio...

The example test station cited for this was 2JU whose transmissions showed, in one case, a fading characteristic that began later in time at each of several receiving stations progressively spaced further away. Continued analysis might make it possible to calculate the position of "the reflecting media," whatever it was, learn about it, and maybe do something about it (still hoping!). They also believed that changes in received wavelength, as reported by some, were merely reception artifacts. It was possible, however, for a broad transmission to simultaneously fade on one wavelength and not on another.

The first part of the long-awaited report led the November issue of QST. The entire report had already been presented to the RCA on 24 September at Columbia University. Written by frequent QST technical author Robert S. Kruse, who also held the title of Assistant Electrical Engineer at the Bureau of Standards, the article described how the tests were run. They had been a collaborative government-amateur operation, exemplified by Kruse, a member of both groups. The ARRL selected the stations and conducted the operation, and the Bureau analyzed the reports and provided overall guidance.

Hams were particularly interested in the prevalence of fading effects in shortwave work – so much so that QSS had now become as often used on the air as QRM and QRN in describing adverse conditions affecting relay work. Many thought that if by running tests amateurs could better understand the phenomena, they might be able to avoid it. Few yet considered using and exploiting a newly discovered capability.

Six amateur stations and NSF, the Navy station in Washington, were selected to transmit at specific times each Tuesday, Thursday and Saturday night for six weeks during the summer. The group included some of the most well-known amateurs in relay work: 1AW, 8XK, 9ZN, 8ER, and 9LC. All had received special authority to use a 250-meter wavelength. Kruse himself manned WWV, the Bureau of Standards station in Washington, D.C.

Fifty-one receiving, or recording, stations were chosen, from the Atlantic coast west to Illinois and Iowa, and from New Hampshire south to Virginia and Tennessee. Among the recorders were many more accomplished relayers including Vermilya, 1ZE. They all used similar antennas and a Paragon receiver consisting of a regenerative detector and a two-stage audio amplifier. While each transmitting station took its turn sending the test sequence, the remaining six acted as recorders.

Although criticized for their decision, the test organizers confined the operation to the northeast in order to make the analysis task manageable—the more than one thousand expected reports would make it tedious and time consuming—and because a greater number of qualified stations were available there.

Tests were conducted at a wavelength of 250 meters under a special government permit (which was not required for 9ZN and 8XK, both of whom already had special licenses, and NSF, a government station). Warner and Maxim at 1AW in Hartford ran their own preparatory experiment to test the repeatability of the recording method. Listening to 2JU transmitting from Long Island they demonstrated that two independent listeners would always produce curves of the same general sequence of ups and downs, although absolute levels and precise shape might vary. Before receivers had S-meters and no other quantitative measurement of received signal strength was in use, the QSS tests relied on ears to detect, and brains to judge, signal levels.

Each test commenced at 10:00 p.m. eastern time with all transmitting stations listening for the time from Arlington. 1AW would then announce the test by sending a QST beginning at 10:10, and each of the other transmitting stations would follow at 10-minute intervals. In December, Part 2 of the report presented the initial results, from those tests which took place under summer conditions—that is, during the final month. Several notable things had been demonstrated. There were three kinds of fading: very rapid, moderately fast, and slow. And it was conclusively a "distance phenomena," since no receivers observed fading of signals from nearby transmitters.

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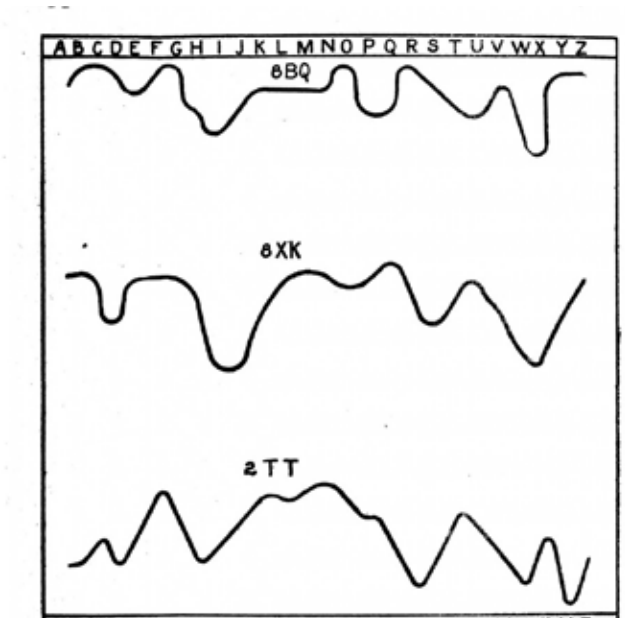
History of Ham Radio...

One could often correlate results ("checks") from several receiving stations within the same geographical area that were all monitoring the same transmitting station. Sometimes such a correlation of reports could also be observed between receiving stations that were further apart. Occasionally a correlation would be displaced in time, with a curve repeating itself later in the alphabet at one station compared with a second. Sixteen of these time-sequenced correlations were discovered that involved three stations, and thirty-two that involved only two (and were discounted). No weather correlation was found at all.



Another correlation—inverse curves—was a pair of curves in which one had a shape roughly the mirror image the other. It was not frequently observed, though, and Kruse speculated that they might only be coincidences.

Analysts began to speculate about the physical phenomena that might account for their observations. For example, if the theory about reflection or refraction layers was correct, such a layer would have to be very large and could be "a large cloud, fog bank, mass of fumes from an industrial plant, or perhaps the Heavyside layer," an atmospheric layer predicted by scientists but not yet confirmed by experiment.

3ZF later postulated that ground waves were absorbed while waves at higher angles were reflected by a "stratum in the atmosphere"—and perhaps there was destructive interference taking place between ground and sky.

Almost unanimously the test recorders believed that fading was not due to signal strength variation at all, but wavelength variation (though not caused by the transmitter itself) since they could usually recover a signal by retuning—misunderstanding that a broad spark signal might undergo selective fading. Participants were therefore asked specifically not to retune and thereby introduce another variable. Furthermore, Kruse discounted this notion by reporting that modulated CW signals7 could not be recovered this way and exhibited no trace of the effect.

Even more hams participated in the second series of QSS tests held in October than the first. Over 2,200 records had been reported by the new year even with spotty participation in some of the districts.8 In particular, no good data had been received from Cleveland and Philadelphia, primarily due to the QRM problem from unlicensed spark coil stations. It seemed they might actually have outnumberd properly licensed stations in those cities. Warner suggested that the two prominent local clubs should work to clean up the situation but advised caution, writing,

"We suggest the appointment by each club of a strong Investigation committee, charged with the duty of digging out these offenders. Wouff-Hong tactics should not be used at first, as without doubt many of these men do not know that they are violating a Federal law, and a spirit of friendly cooperation and assistance in enlightening them and helping them to secure licenses will result in more good stations, more members for the clubs. And the conversion of a dangerous situation into a local organization of which any club may be proud."

The final report on the QSS tests named the winners of the Bureau of Standards' prizes for receiving. Maxim was declared the overall winner after applying a somewhat complex scoring scheme.

Solar phenomena, signal fading (or enhancement),and the changes with distance and antenna height—it all added up to something. Probing the limits of understanding how radio waves behaved, hams had just scratched the surface, not quite yet understanding something that would be a bigger prize for them all.

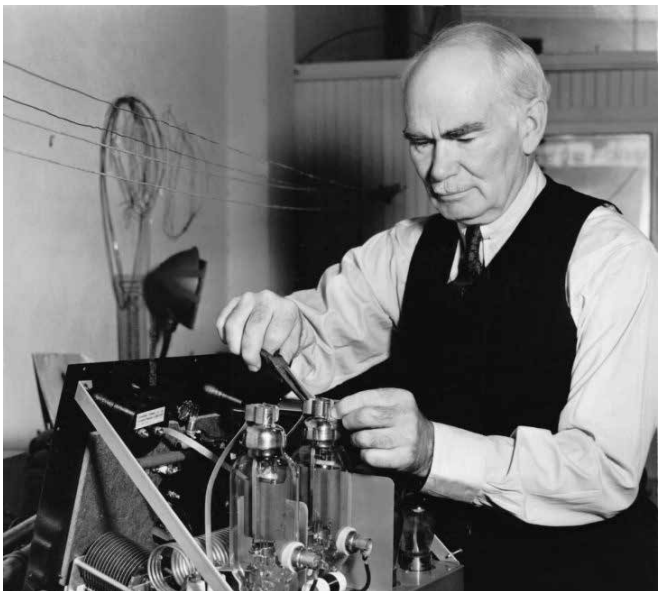
de Forest... Radio Pioneer

KZY went on the air at midnight on Christmas Day, 1921, broadcasting several hours of Christmas carols. It quickly developed a large and loyal following in the Bay Area, and was heard clearly at night throughout the Western states.

Live and recorded music programs were supplemented by news reports provided by the San Francisco Call and the Oakland Post-Enquirer.

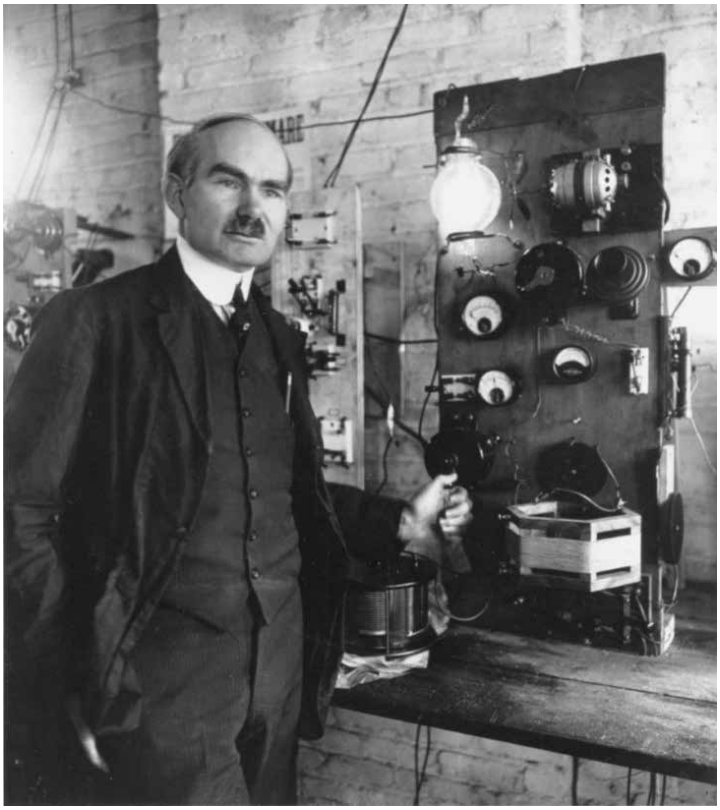
But soon, like so many pioneer broadcasters, the new operators lost interest in funding the high cost of a radio station without any incoming revenue, and KZY had ceased operation by the end of 1922.

Back in New York, one of de Forest's employees, engineer Robert Gowen, assumed responsibility for the company's broadcasting activities. He built station 2XX at his home in Ossining and broadcast phonograph and live music each night at 11 p.m.



Lee de Forest works in 1937 on his invention of the "dynatherm," a medical device used on radio waves.

Vaughn De Leath again was heard on the New York airwaves, and news reports were broadcast nightly. 2XX operated from December 1919 to May 1921 with 300 watts on 330 meters, and was heard by amateurs around the country.



Here is de Forest with one of his first Oscillon transmitters, similar to one used at Highbridge. Before 1915, de Forest and others used arc transmitters, and he was apparently the first to develop a tube transmitter.

In 1921, the Department of Commerce became concerned that too many amateur and experimental stations were broadcasting programs intended for the general public, and so in the fall of 1921 it created a new "Limited Commercial" license class specifically for broadcasting. All stations were required to share just two frequencies: 360 meters (833 kHz) and 485 meters (619 kHz). All other classes of licenses were forbidden from broadcasting music and news.

And so, in order to continue broadcasting, the de Forest Company closed 2XX and obtained a Limited Commercial license on Oct. 13, 1921, with the randomly-assigned call sign WJX. But apparently, the station was never a serious venture and appears to have operated only sporadically. The license was finally deleted in June of 1924, marking the end of Lee de Forest's radio broadcasting activities.

The renowned inventor spent the majority of his remaining career on the development of his sound-on-film system. It fell to the big electrical corporations — General Electric, Westinghouse, RCA and AT&T — to develop radio broadcasting into a solid commercial technology.

About the Author: John Schneider is a lifetime radio historian, author of two books and dozens of articles on the subject, and a Fellow of the California Historical Radio Society. He wrote in Radio World in December about KJR in Seattle, perhaps the first station in the U.S. to achieve a century of continuous broadcast activity.

Let's Get Creative this Year on Field Day

By Dan Romanchik, KB6NU

Since many of us are still hunkering down, and that doesn't look like it's going to change much by the end of June, Field Day is going to be a lot different this year. Our club has canceled our club event, and I'm really going to miss helping newcomers operate the GOTA station, as well as the food, and all the camaraderie. That doesn't mean that Field Day can't still be fun, though. Let's' get creative!

First, note that the ARRL has modified the Field Day rules for this year. The biggest change is that Class D stations -- that is home stations using commercial power -- can now work other Class D stations for points. Previously, this wasn't allowed.

The second change is that the ARRL will publish aggregate club scores this year. In previous years, this was only done for Class A and Class F entries. Remember, though, Field Day isn't a contest (yeah, right!).

Personally, I plan to operate 1B-Battery. I'm going to set up my KX3 on the front deck and power it with a LiFePo battery charged by a recently-acquired solar panel to get the 100 point bonus for alternate power. For an antenna, I plan to set up my 20m/40m fan inverted-V "GOTA antenna" in the front yard.

I'm going to shoot for other bonus points, too:

- Copy the bulletin a "no brainer"
- Promote my location on social media. I am going to get on NextDoor and invite neighbors over to watch from an acceptable social distance.
- Put some literature down at the bottom of the hill near the street and claim a public information table.
- Send a press release to the local on-line paper and claim a media publicity credit.
- Perhaps get someone under 20 to come and operate while I coach from an acceptable social distance.

If Class B isn't your cup of tea, check out the presentation, "Field Day and Social Distancing." It's at: ***https://docs.google.com/presentation/d/e/2PACX-1vSWypTtJ_R0s-UmysOEhQWwJwBlMrOavXqfs5AvigQzad8Z1c3JFn9TMl5ewxc8VVIIX-2g6bOTpUFD/pub?start=false&loop=false&delayms=3000#slide=id.g774df1657a_0_39.***

Produceded by Anthony Luscre, K8ZT, it has a lot of great ideas, including ideas on how to operate mobile as a Class C station.

Field Day doesn't have to be a downer this year. Get creative and have some fun.

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Dan Romanchik, KB6NU, is the author of the KB6NU amateur radio blog (KB6NU.Com), the â€œNo Nonsenseâ€ amateur radio license study guides (KB6NU.Com/study-guides/), and often appears on the ICQPodcast (icqpodcast.com). When he's not thinking up new ways to enjoy Field Day, he likes to build stuff and operate CW on the HF bands.

CALENDAR

June 10, 2020 - 7 pm - Monthly club meeting by teleconference. Details to be emailed.

June 24, 2020 - 7 pm - EGARA Roundtable on 147.270

June 27-28 - Field Day - 2pm EDT Saturday until 2 pm EDT Sunday. Members to work home stations.

Re-scheduled - EGARA Hamfest - Moved from may 9th to August 29th.

Pro Tip: Summer's Here, Keep Cool

It may seem like common sense, but it's easy to overlook keeping your electronic gear cool during the hot days of summer. This is especially true if you have mobile gear that's exposed to high temperatures while your vehicle is sitting in the sun.

So here's the basics once again.

Position Electronics Away from Heat

Avoid placing your gear by a window under direct sunlight. If possible, move it to a cooler and cleaner area. It is best to position it along the path of airflow from a fan or air conditioner. You will be amazed how this can help cool down your equipment.

Don't Stack Gear

Electronic devices get hot enough on their own. Stacking them on top of each other produces and conducts even higher temperatures. Keep your devices spread out and use shelves with clearance whenever possible.

Keep It Clean

The fans inside your equipment are there to keep it cool. Dirt, dust, human or pet hair, etc will slow down the fan and eventually cause it quit. Use a can of compressed air to blow the dust off fans and components. Remember to keep all of the vents clean and unobstructed too.

Cool it Down First

You may be tempted to turn on your mobile rig as soon as you get in your vehicle, but letting the air conditioning run a couple of minutes before you do can help avoid overheating your gear. Leaving a window cracked when possible while parked can also let heat escape and keep the interior cooler.

For Sale

- **Arrow Model 52-S4** - 4-Element 6 Meter Yagi antenna in good condition. $75.00
  Contact Steve at: svansick@nycap.rr.com

- **J FT-2DR with accessories.** Like new. Sells for $370.00 without extra accessories. Selling for $300.00
- **MFJ-936B with loop wires covering 80-10.** Sells for $299.00 without the wire. Selling for $200.00

Contact Fred Carroll, AJ4CN at: aj4cn@yahoo.com

- **Daiwa CN 103 L SWR power meter,** covers 140-525 mhz. Asking $30.
- **Jetstream JTWXHF SWR/watt meter,** covers 106-60 mhz. Asking $30.
- **Yeasu HM-34 Speaker Mic,** Asking $10.00.
  Contact Walt Snyder at: n2wjr@earthlink.net

Gear to Sell, Swap or Buy?
Send your listing to W2RBJ@Outlook.com

Mark Your Calendar
Hamfest
August 29th

The East Greenbush Amateur Radio Association

Organized in 1998, by Bert Bruins, N2FPJ, (SK) and Chris Linck, N2NEH, the East Greenbush Amateur Radio Association, an ARRL affiliate, is committed to providing emergency services, educational programs, and operating resources to amateur radio operators and residents of the Capital Region of New York State. The club station is W2EGB. The club also has several VHF and UHF repeaters open to club members and the public.